Project Proposal

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Topic

My proposed topic of research is the potential applications of genetic algorithms on fully-autonomous road networks.

Question Definition

The question I will attempt to answer will be:

> *What is the suitability of (Q)GAs with regards to fully autonomous road networks? How well could they perform and how feasible are they to implement over the next 1, 10 or 50 years?*

With a possible report title being:

> *Applications of GAs and QGAs on theoretical fully-autonomous road networks.*

Methods

In order to answer my question I will begin by researching the subject. Once I understand the current research, I can begin altering their approaches to target my specific area. Here I will use a programming language to implement models and simulations where I can experiment with algorithmic tweaks in order to increase performance. The languages I am considering for this project are: Python, Julia or Rust. The reasons for my ultimate choice will be laid out in my report. I will go on to look into the quantum computing applications on this area where I will also implement simulations most likely using the Qiskit module for Python.

Milestones

1) Finish initial research phase & begin implementation phase
2) Finish classical implementation phase & begin classical evaluation phase
3) Finish classical evaluation phase & begin further research into quantum implementation
4) Finish research & begin implementation phase
5) Begin quantum evaluation phase
6) Finish evaluation phase & begin final write up
7) Report finished